

## INDEX

- ahkio sled, 4-12, 5-2
- aiming posts, 4-5
- air brakes, 2-1, 2-10
- air compressors, 2-10, 3-14
- air-cooled systems, 2-7
- aircraft and instrument grease, 4-16
- air defense artillery, 4-12, 4-13
- air tanks, D-3
- alkaline batteries, 1-13, 4-5, 6-4
- ammunition
  - combustible cartridge case rounds, 4-13
  - consumption in cold weather, 1-4, 5-3
  - effects of cold conditions on, 4-1, 4-9, 4-13, 4-14
  - guidelines for cold weather use, 4-14
  - hand grenades, 4-14
  - large caliber, 4-13
  - maintenance of, 5-3
  - mortar, 4-14
  - resupply, 5-3
  - storage areas, 1-4
  - temperature limitations, 4-13
- antenna systems, 6-3 through 6-5
- anticondensation containers, 4-3, 4-4, 4-16, 4-19
- anticon tact gloves, 4-10, 6-3, B-1
- antifreeze, 1-5, 1-7, 1-10, 1-14, 2-4 through 2-6, 2-9, 2-10, 3-13, 4-12, 4-13, A-1, D-2, E-9
- AOAP. *See* Army Oil Analysis Program.
- Army Oil Analysis Program, 1-11
- artillery
  - air defense, 4-12, 4-13
  - emplacement, 1-4, 4-5
  - howitzers, 4-8, 4-9, 4-13
  - lubrication and winterization of, 4-2
  - operations and maintenance in cold regions, 4-9, 4-10
  - recoil mechanisms, 1-4
  - towing of, 1-4
- Aurora Borealis, effects of, 4-1, 6-2
- auxiliary engines, 2-10
- auxiliary equipment, 3-14, 4-12
- auxiliary power (slave) receptacle, 1-16, 3-4, 4-18
- azimuth orientation, 6-4
- batteries
  - alkaline vs carbon, 1-13, 4-5
  - diesel engine, D-2
  - effects of cold on, 1-11, 1-12, 3-3, 6-1, E-9
  - efficiency of, 1-12
  - electrical system, 2-9, 3-10
  - environmental procedures, 1-14
  - freezing points of, 1-12
  - lithium-based, 1-14, 6-3, B-1
  - maintenance of, 1-8, 1-12, 3-2, 6-6, D-2
  - Mercury, 1-14
  - nickel-cadmium (NICAD), 1-13, 6-7
  - temperate zone dry, 4-18, B-1
- battery booster cable, B-1
- battery heater, 2-9
- before-operations checks, 2-1
- binoculars. *See* optical instruments.
- biological agents, effects of cold on, E-3
- blister agents. *See* chemical agents.
- blood and choking agents. *See* chemical agents.
- brakes
  - air, 2-1
  - hand, 4-2
  - hydraulic, 2-1
  - parking, 3-7
  - use in cold weather, D-3
- cab closures, 2-3, 3-6
- cable
  - battery booster, B-1
  - coaxial versus RG-8, 6-4
  - handling at low temperatures, 1-4, 4-16, 6-1, 6-4, 6-6, D-2
  - insulation, 4-2
  - kit, B-1
- carbon batteries, 1-13
- carbon monoxide poisoning, 1-7, 1-8, 3-1, 3-2
- central tire inflation system, 2-1, 2-10
- chains, vehicle, 3-6
- Chaparral missile system, 4-12, 4-13
- chemical agents, effects of cold on, E-3, E-4
- chemical agent detector kits, M-256/

## INDEX

---

M-256A1, E-5  
chemical-biological masks, field, E-6  
chemical protective overgarment/glove set, E-7  
cleaner lubricant and preservative, 4-3, 4-6, 4-9 through 4-11, 5-2, A-1  
CLP. *See* cleaner lubricant and preservative.  
cold-dry conditions, effects of, 4-1, 4-16, 5-1, 6-1  
cold injuries, 1-6, 1-9  
cold-soaked equipment, 1-5, 1-9, 1-10, 1-16, 3-1, 3-10, 4-19, 6-1, 6-2, E-9  
cold weather mask, 4-17, 4-18  
cold weather materials (0°F to -65°F), B-1, B-2  
command and control, 1-6  
communications equipment, 3-2, 3-3, 6-1 through 6-7  
compasses. *See* optical instruments.  
compensated sight picture, 4-19, 4-20  
computers, 6-6, 6-7  
condensation, effects of, 4-1, 4-3, 4-4, 4-7, 4-11, 4-13, 4-16, 4-17, 5-1, 5-3, 6-1, D-3  
contamination (NBC) avoidance measures, E-5  
covers, use of, 4-3, 4-4, 5-1, 5-3, 6-1  
CTIS. *See* central tire inflation system.  
  
DAP. *See* decon apparatus portable.  
decon apparatus portable, E-9  
decontamination kits, E-7  
decontamination (NBC) operations, E-5, E-6, E-8, E-9  
demolitions, 4-15  
detection (NBC), E-5, E-6  
Dextron II, 2-2  
Dextron III, 2-4  
DFA. *See* diesel fuel, arctic.  
diesel engines, 2-7, 3-2, 3-4, 3-13, D-2  
diesel fuel, arctic, 2-7, E-9  
direct fire weapons, 4-9, 4-13  
Dragon missile system, 4-11  
  
ECWCS. *See* extended cold weather clothing system.  
electrical systems  
cold weather preparations, 2-9  
effects of cold on, 2-8, 2-9  
maintenance of, 3-10  
operating guidelines for, 3-10  
starting procedures, 3-10, 3-12  
electromagnetic conditions, 4-1, 6-1, 6-2  
electromagnetic pulse, E-2  
engine sludge, 3-9  
environmental protection, 1-5, 1-6, 1-10, 1-11, 1-14, 3-9, 3-12, 4-3, C-1  
equilibrators, maintenance of, 4-8  
equipment  
assembly in cold conditions, 6-1  
cooling systems, 2-4, 2-5, 2-10, D-2  
grounding of, 6-1, 6-2, 6-6  
radiators, D-3  
shock absorbers, 2-2  
spark plugs, D-2  
springs, 2-3, 3-6, D-2  
steering gear, 2-2  
tires, 1-4, 2-3, D-2  
tracks and suspension, 2-2, D-2, D-3  
equipment operations  
in cold weather, 1-2, 1-10, 2-1, 3-5, 3-7  
difficulty vs temperature range, 1-2  
extended cold weather clothing system, E-2  
eyepieces. *See* optical instruments.  
  
fabrics  
effects of cold on, 1-4  
family of medium tactical vehicles, 2-1, 2-10, 3-12  
family of scatterable mines, 4-15  
fan belts, 3-10  
FASCAM. *See* family of scatterable mines.  
field artillery missiles and rockets, 4-12  
fire  
control equipment, 4-1, 4-3, 4-4, 4-11, 4-12, 4-16, 4-17, 4-19  
extinguishers, 2-3, D-2  
hazards, 1-15, E-9  
FMTV. *See* family of medium tactical vehicles.  
force projection, 1-1  
frostbite, 1-6, E-9  
frozen surfaces, effects of, 4-1, 4-10, 4-11, 6-1  
fuel-additive mixtures, 2-8

- fuel
  - contamination, 3-11
  - filter maintenance, 3-13, 6-6
  - injected systems, 3-12
  - requirements/supplies, 1-5, 3-1
  - systems, 2-7, 3-11, 3-12, 3-13
  - tank, D-3
- generators, 2-10, 6-6
- GIA. *See* aircraft and instrument grease.
- glass
  - effects of temperature on, 1-4, D-2
- gloves. *See* handwear.
- GMD. *See* grease, molybdenum disulfide.
- GPS. *See* gunner's primary sight.
- grease, molybdenum disulfide, 2-8, 4-5
- grease, wide temperature range, 4-2, 4-8
- grenade launcher, M203, 5-2
- grounding kit, surface wire, B-2
- grounding techniques
  - communications equipment, 6-1, 6-2, 6-5
  - generators, 6-6
- ground plane antenna, 6-5
- gunner's primary sight, 4-17
- hand grenades 4-14, 4-15
- handwear, 1-6, 1-8, 4-4, 4-10, 4-14, 4-15, 5-2, 6-1, E-7
- hardtop closure kit, 1-15
- hazards
  - carbon monoxide poisoning, 1-7, 1-8, 3-1, 3-2
  - cold injuries, 1-6, 1-9, 6-3
  - dehydration injuries, E-8
  - fire, 1-15, E-9
  - frostbite, 1-6, E-9
  - hypothermia, 1-6
  - off-gas concentrations of chemical agents, E-3
  - psychological stress, E-1
  - static electricity, 4-16, 6-1, E-9
  - vapor hazard of nerve agents, E-3, E-5
- heaters
  - air manifold, 3-4
  - battery, 2-9
  - duct-type, portable, D-3
  - fire hazards from, 1-15
  - fuel-burning, portable, 1-15, 1-16, 2-9, 2-10, 3-13, D-2
  - personnel, 1-14
  - power plant, 1-15, D-3
  - swingfire, 1-15, 2-10, 3-13
- heat systems, 1-15, 1-16
- heavy equipment transporter, 2-1, 2-10, 3-12
- HET. *See* heavy equipment transporter.
- high mobility multi-purpose wheeled vehicle, 2-1, 3-6, 3-10
- HMMWV. *See* high mobility multi-purpose wheeled vehicle.
- HNS. *See* host nation support.
- host nation support, 1-6, 1-14
- hydraulic brakes, 2-1
- hydraulic fluid, 1-10, 2-2, 4-1, A-4
- hydraulic fluid, petroleum base (OHT), 2-2 4-2, 4-6, 4-7, A-4
- hydrogen gas, 1-12
- hydropneumatic mechanisms, 4-2, 4-7
- hypothermia, 1-6
- ice, crossing, 3-6
- ice fog, 4-1, 4-9, 4-10, 5-3
- idling
  - and carbon monoxide hazard, 1-8
  - limitations, 3-1, 3-2, D-3
  - procedures, 3-7, 6-6
- indirect fire systems, 4-9 through 4-11, 4-13
- instrument lubricating oil, 4-16, A-2
- joints, universal and slip, 2-8
- jump-start procedures, 1-12, 1-13
- lasers, 4-19
- LAW. *See* lubricating oil weapon.
- LCD. *See* liquid crystal displays.
- liquid crystal displays, 4-20, 6-6, 6-7
- lithium sulfur dioxide batteries, 1-14
- LO. *See* lubrication orders.
- logistical planning
  - factors impacting, 1-5, 1-6
  - for remote, cold regions, 1-5
- long wire antenna, 6-5
- lubricants, 1-10, 1-11, 1-14, 2-3, 2-4, 2-8, 2-10, 2-11, 4-2 through 4-8, A-1 through A-4, D-2, D-3

## INDEX

---

- lubricating oil weapon, 4-3, 4-6 through 4-8, 4-9, 4-10, 5-2, 5-3, A-3
- lubrication orders, 1-11, 2-3, 2-4, 6-6
- machine guns, 5-3
- magnetic instruments. *See* electromagnetic conditions.
- maintenance
  - cold weather, D-1 through D-3
  - facilities, 1-7, 1-8
  - mortars, 4-10, 4-11
  - of air compressors, 3-14
  - of batteries, 1-8
  - of communications equipment, 6-2 through 6-4
  - of cooling systems, 2-5, 2-6, 2-10, 3-13, D-2
  - of fire control equipment, 4-16
  - of fuel systems, 2-7, 3-12, 3-13
  - of generators, 6-6
  - of lubrication systems, 2-3, 2-4, 2-8, 3-8, D-2, D-3
  - of universal and slip joints, 2-8
  - personnel, 1-8, D-1
  - requirements in cold weather, 1-7, 1-9, 4-16
  - responsibilities, D-1
  - weapons, 4-2 through 4-8, 5-1
- matériel
  - effects of temperature on, 1-2 through 1-4, D-1, D-2
- metals
  - effects of cold on, 1-3, D-1
- MGS. *See* missile guidance set.
- mines, 4-15
- missile guidance set, 4-12
- missiles, 4-11, 4-12
- mission
  - adverse effects of cold on, 1-4
- mission oriented protective posture gear, E-8
- mittens. *See* handwear.
- MOPP. *See* mission oriented protective posture.
- mortars
  - maintenance of, 4-10, 4-11
  - seating the baseplate, 4-10, 4-11
- mountainous areas, effects on NBC defense, E-1
- NBC. *See* nuclear, biological, and chemical agents.
- nerve agents. *See* chemical agents.
- NICAD. *See* nickel-cadmium batteries.
- nickel-cadmium batteries, 1-13, 6-7
- nuclear, biological, and chemical agents, E-1 through E-9
- nuclear protection, E-8
- nuclear weapons, effects of cold on, E-1, E-2
- OAI. *See* instrument lubricating oil.
- OEA. *See* oil, engine, arctic.
- OHT. *See* hydraulic fluid, petroleum base.
- oil, engine, arctic, 1-10, 2-2 through 2-4, 2-8, 2-10, 3-8, 3-9
- oil pressure, 3-8, 3-9, D-3
- optical instruments
  - binoculars, 4-19
  - cleaning of, 4-17
  - covers for, 4-20
  - fogging at low temperatures, 4-17
  - independent thermal viewer, 4-20
  - lensatic compass, 4-19
  - protection methods, 4-19
- palletized load system, 2-1, 2-10, 3-12
- parachutes
  - as temporary shelters, 1-7
- personnel heaters, 1-14, 1-15
- petroleum, oils, and lubricants
  - antifreeze, 1-5, 1-7, 1-10, 1-11, 2-4, 2-5, 2-6, 2-9, 3-13, 4-13, A-1, D-2, E-9
  - barrel storage, 3-12
  - cold weather materials, listing of, A-1 through A-4
  - cold weather requirements, 1-5, 1-14
  - disposal, 1-11
  - environmental considerations, 1-5, 1-6, 1-10, 1-11, 3-9, 3-12, 4-3, C-1
  - fuels, 1-10, 2-7, A-1 through A-4, E-9
  - grease, wide temperature range, 4-2
  - hydraulic fluids, 1-10, 2-2, 4-1, 4-13, A-4
  - lubricants, 1-10, 1-11, 1-14, 2-2 through 2-4, 2-8, 2-10, 2-11, 3-8, 4-1 through 4-3, 6-6, A-1 through A-4, D-2, D-3

- oil pressure, 3-8, D-3
- recoil fluids, 4-1 through 4-3
- shock absorber fluid, 2-2
- spill procedures, 1-6, 4-3
- pistols, 5-2
- planning factors, 1-6
- plastics
  - effects of cold on, 1-4, D-2
- PLS. *See* palletized load system.
- PMCS. *See* preventive maintenance checks and services
- POL. *See* petroleum, oils, and lubricants
- power plant heaters, 1-15, 3-1, 3-2, D-3
- power takeoff assemblies, 2-10, 2-11, 3-14
- power train, 3-7
- preventive maintenance checks and services, 1-3, 1-6, 2-1, 3-1, 3-8
- protection (NBC), E-5 through E-8
- protective masks, E-6, E-7
- psychological stress, E-1
  
- quick heat system, 1-15
  
- radiation
  - effects of cold conditions on, E-2
  - gamma and neutron, E-8
- radio-equipped vehicles, 3-2, 3-3, 6-3
- radio systems. *See* communications equipment.
- recoil mechanisms, 1-4, 1-10, 4-1 through 4-4, 4-6 through 4-9
- rifles, 5-3
- rockets, 4-11, 4-12
- rubber
  - cables covered in, 1-4, D-2
  - effects of temperature on, 1-3, D-2
  - synthetic, 1-3
  
- security, 1-6
- serpentine belts, 3-10
- SFL. *See* solid film lubricant.
- shock absorbers, 2-2
- signal attenuation, 6-1
- SINCGARS. *See* single-channel ground and airborne radio subsystem.
- single-channel ground and airborne radio subsystem, 1-14, 6-1, 6-3
- small arms, 5-1 through 5-3
  
- snow and ice
  - as protection from contamination, E-9
  - effects of, 2-2, 3-5, 3-11, 4-1, 4-8, 5-1 through 5-3, 6-1 through 6-3, D-2, D-3
  - mobility in, 1-4
  - removal of, 1-7
  - vehicle recovery in, 1-9, 1-10, 3-4
- solid film lubricant, 4-3
- SOP. *See* standing operating procedures.
- standby heat system, 1-16
- standing operating procedures, 1-5, D-1 through D-3
- static electricity, 4-16, 6-1
- Surface Wire Ground System, 6-2, B-2
- SWGS. *See* Surface Wire Ground System.
- swingfire heater, 1-15, 3-13
  
- tarpaulins, 1-4, 1-7, 1-9, 4-3, 5-3, D-2
- telephones, 6-4
- telescopes. *See* optical instruments.
- thermal blast. *See* nuclear weapons.
- tires
  - chains for, 3-6, D-3
  - effects of cold on, 1-4, 2-3, 3-5
  - inflation pressure, D-2
  - selection of, 3-6
- TNT, 4-16
- TOW. *See* tube launched, optically tracked, wire guided missile system.
- tracks
  - cold weather adjustment, 2-2, 2-3
  - cross-country operations, 4-2
  - idling, 3-1
  - in ice and snow, 3-5
  - parking, D-3
- transmissions
  - automatic, 3-7
  - conventional, 3-7
- tube launched, optically tracked, wire guided missile system. 4-11, 4-12
  
- unexploded ordnance, 4-15
- universal and slip joints, 2-8
- UXO. *See* unexploded ordnance.
  
- vapor barrier boots, E-7
- VB boots. *See* vapor barrier boots.
- vehicle recovery, 1-9, 1-10

## INDEX

---

### vehicles

- before operations procedures, D-2
- cold-starting, 3-1, 3-3, 3-10
- disabled, 3-4
- heavy, 3-1
- jump-starting, 1-12, 1-13
- maintenance of, D-1
- mobility in cold conditions, 1-4
- operating and idling, 3-1, 3-7
- operating procedures for, D-2, D-3
- oversnow, 3-1, 6-4
- radio-equipped, 3-2, 3-3
- shutdown of, 1-4, 3-1, 3-7, 3-8, 3-13, D-3
- towing to start, 3-4, D-3
- tracked, 2-2, 2-3, 3-1, 3-5, 4-2, D-3
- transmissions, 3-7
- windows, defrosting of, D-2

### ventilation, 1-7

vertical half rhombic antenna, 6-5

visibility factors, 4-1, 5-2, 6-1 through 6-3

### weapons

- air defense, 4-12, 4-13
- antitank wire-guided systems, 4-11, 4-12
- bore maintenance, 4-6, 4-9
- breech and firing mechanisms, 4-5, 4-6
- condensation effects on, 4-3
- covering, 4-3
- cradle, sleigh, carriage, and mount, 4-8

daily care of, 4-4

direct fire, 4-9, 4-13

elevating and traversing mechanisms, 4-8

emplacement (site selection and preparation), 4-1, 4-5, 4-10, 4-11, 5-2

equilibrators, maintenance of, 4-8

exercising, 4-4

gascheck pads, 4-2, 4-5, 4-6, 4-9

grenade launcher, M203, 5-2

indirect fire, 4-9 through 4-11, 4-13

lubrication procedures, 4-2

machine guns, 5-3

missiles, 4-11, 4-12

mortars, 4-10, 4-11

over-lubrication of, 4-1, 4-2

pistols, 5-2

problems in cold conditions, 4-1, 4-2

recoil mechanisms, 4-1 through 4-4, 4-6 through 4-8

rifles, 5-3

rockets, 4-12

small arms, 5-1 through 5-3

wheel bearings, 2-1

winches, 1-9, 1-10, 2-11

winterization kits, 1-14, 2-9, 2-10, 3-13, 4-11, E-6

wire-laying techniques, 6-4, 6-6

wire-guided missiles, 4-11

WTR. *See* grease, wide temperature range.